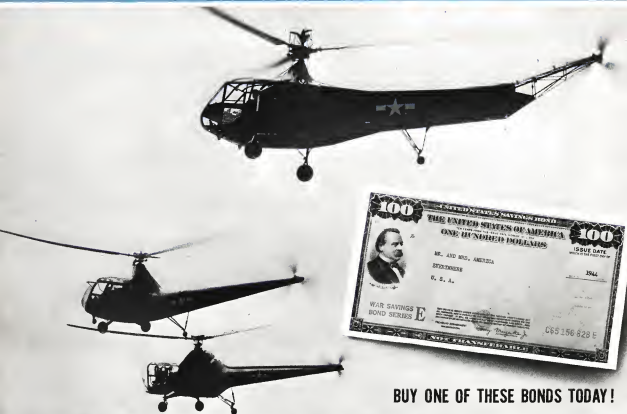


Aviation News

McGraw-Hill Publishing Company, Inc.

JUNE 26, 1944



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Helicopter Evolution in 18 Months: *The three Sikorsky helicopters in production or soon to go into production are shown here in a demonstration flight. Top helicopter is the R4-B, now in production. It will be followed shortly by the XR-6, middle, and the XR-5, at bottom. (Other helicopter photos on Page 15.)*

Report Soviet Agreement on U. S. Air Policy

Russia apparently willing to specify certain routes which she will permit friendly nations to use, official sources reveal.....Page 34

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B-29 Tests and Output as Sensational as Plane Itself

Boeing Wichita was on heavy production schedule of *Superfortresses* within two years after construction of huge new plant.....Page 27

U. S. Urged to Curb Air Transport Over-Expansion

National City Bank of Cleveland sees danger in uncontrolled development; doubts complete appraisal can be made at present.....Page 31

Strategic Air Operations Assume Global Pattern

Huge aerial battle fleet is capable of striking decisive blows far behind battle lines to hasten weakening of enemy resistance.....Page 19

check this new development for '44... form

INTRICATE SHAPES FROM FLAT SHEETS WITH MICARTA "444"

Micarta "444"—a new development in micarta—now offers a new, practical and economical means for forming structural shapes from completely cured flat sheets... with low-cost equipment, and dies of non-oxidizing materials. Shapes like those shown can be produced easily and quickly—in most cases with inexpensive wood molds and by use of a simple roller press. Deep draws, sharp bends and intricate shapes may be obtained. Parts produced are strong, stable and permanent.

Originally developed for aircraft needs, Micarta "444" is being used for trim tab fairing, fuselage tail-wheel housings, ammunition feed chutes, and for many other practical applications. It provides characteristic Micarta properties of strength with lightness, and resistance to heat, cold, humidity and chemicals. Investigate the full story—write for the new Micarta Data Book B-3184-A. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. 15004

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THE AVIATION NEWS

Washington Observer

B-28 CURRENT—Press releases give ample indication that many persons and many companies participated in the program which led to the bombing of the Japanese homeland by Boeing's B-28 "Superfortresses." At the press preview of the B-28 in Wichita, Army officers and Boeing officials said it was impossible to name only a few of those responsible for the airplane. There are many, of course, but it appears that the names of Gen. H. H. Arnold and the late Eddie Allen should lead the rest. This is not meant to take credit from any individual or firm, since the B-28 is an example of what the aircraft industry and the military working together can do. There is glory enough for all.

AIR MOVES UP—Allied gains in France have taken enough territory now to permit establishment of adequate air strips on the continent. The Luftwaffe has been driven back and the Allies now can move up. Moreover, reserves do not have to come 120 miles from England to meet sudden threats. The advantages are tremendous and should speed up the pace of the advances in proportion.

GIRDLER'S PLANS—Tom Girdler, chairman of the board of Republic Steel and head of Consolidated Vauxel has announced the Observer's recent forecast that he will leave the aviation field in the indeterminate future. In a speech in Cleveland recently he asserted that steel was his first and will shortly be his only business interest. He commented that the production of planes was a "one-time job" and that will end as soon as I am no longer making a material contribution through this industry (aviation) to the war effort. When that day comes, and I hope it will come very soon, my time will be devoted entirely to steel.

RESEARCH—Probably the most vital single question to be taken up by the Woodman Commission will be establishment of a permanent research machinery. Experience shows that vital factor of national defense cannot be left to the whim of annual appropriations and some permanent fund basis must be worked out. Economy waves usually come at the times when it is most vital that research be maintained at its highest pitch.

CHURCHILL'S FORECAST—The possibility that this summer may see victory in Europe, which was hinted recently by the British Prime

Minister, resulted in some pretty very faces on aircraft production men. At a time when it is more necessary than ever to keep war production up to schedule, and when war workers are beginning to eye peace-time jobs anyway, a statement such as Churchill's certainly does not make the task of producing airplanes any easier.

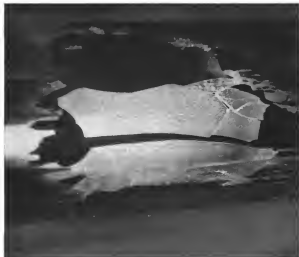
JOINT CHIEFS OF STAFF—If Congress completes legislation making permanent the Joint Chiefs of Staff organization, now functioning by executive order, it is probable that national foreign policy will be more realistic and more adjusted to practical forces. Hereafter the State



The B-28 as Nippon saw it

Department has been in a position of throwing a big stick with an big stick in hitting out where the blow is called. The greater voice for the military may make our foreign policy tougher.

AIR POLICY REAFFIRMED—A sudden spurt of interest in the Airlines Committee for U. S. Air Policy among its airline members has followed announcement of a tentative pattern of world air routes by Civil Aeronautics Board. Chances are that the committee will recognize its own declaration of policy as international air operation about July 15, a year from the date it was announced. Chairman Sam Solomon



Ever see a De-Icer in action?

YOU'VE LOOKED at the leading edge of an airplane wing a split second after the De-Icers were raised on. A sheet of ice that had formed was cracked by the pulsating action of tubes inside the rubber De-Icer "boots." In another second, it will vanish in the windstream. When more ice forms, the De-Icer tubes will pulse again, crack it up... and off! The plane will continue safely on its destination.

In addition to guarding wings, B. F. Goodrich De-Icers crack ice off fins and stabilizers and all protruding accessories such as pilot seats and loop housings. They represent only a fraction

normal percentage of a commercial plane's gross weight, and considering the protection offered for plane and crew, this slight added weight is negligible.

Introduced in 1940, B. F. Goodrich De-Icers have proved the best de-ice protection device ever developed for aircraft. For years they have been the standard ice protection equipment on the airlines. And today, in addition to serving commercial airlines, De-Icers are helping to bring Army and Navy bombers, cargo planes and transports safely through some of the worst icing conditions in the world.

De-Icers are an outstanding example of a B. F. Goodrich development in rubber. They have already saved the lives of countless airmen and will save countless more in both our military and domestic operations. *The B. F. Goodrich Company, Akron, Ohio.*

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FIRST IN RUBBER

Committee Formed for Post-War Research for Armed Forces

Charles E. Wilson to head group composed of four generals, four admirals and four top-ranking civilian scientists.

By WILLIAM G. KEY

The first in a series of steps designed to provide continuous intensive research for America's armed forces has been taken in Washington with the organization of a committee headed by Charles E. Wilson, vice-chairman of the War Production Board.

The research aspect of the post-war military picture is one of the chief concerns of official Washington. The new committee, composed of Wilson, four generals, four admirals and four top-ranking civilian scientists including Jerome C. Hunsaker, chairman of the National Advisory Committee for Aeronautics, will prepare a report for the Woodrum Post-War Military Policy Committee.

The committee will hear an implementation of the suggestion of J. Carlton Ward, Jr., president of Fairchild and spokesman for the Aeronautical Chamber of Commerce, that a procedure be set up by which scientific and research projects will be continued when political and practical expediency demand immediate cancellations of war orders.

Verdant After War—With the major exception of the NACA, all research projects now being undertaken for the armed forces will end within a month or two after the war. It has been feared that all contracts of the Office of Scientific Research and Development carry a 30-day cancellation clause and that thus far no provision has been made to carry on vital projects.

The aircraft industry is particularly concerned about NACA, which, prior to the war, was handicapped for funds to maintain even elementary projects and facilities for testing and experimentation.

Many projects now being carried out by the OSRD are vital to aeronautical progress.

Model Example—Mr. Ward pointed out in the Woodrum Committee that Hader probably originated in principle in the U. S. in 1935. The British developed it, however, and saved off German air attack.

The committee, set up by the Secretaries of Navy and War, will chart the relationship between the armed services and a post-war OSRD which would retain independence to initiate research projects as well as develop projects

submitted by the armed services. Such an organization would constitute a scientific high command charged with the responsibility of keeping this country far ahead of other nations in research and development.

Problem—Probably the chief problem faced by the committee will be provision for permanent financial resources for the post-war OSRD. It is known that this has been one of the principal concerns of the Woodrum Committee. One early suggestion was establishment of a permanent appropriation, but this is complicated by the fact that one Congress cannot bind another to the expenditure of public funds. Another suggestion was an authority based on the TVA legislation, but it is argued that there would be no income to feed a revolving fund such as that used by TVA. Still another suggestion was that of an "endowment" fund set up by Congress. But there have been instances in which funds of



ACCA EASTERN GOVERNORS MEET AT NEW YORK

Members of the Eastern Division Board of Governors of the Aeronautical Chamber of Commerce at their New York meeting last week. Left to right: Leander D. Bell, president, Bell Aircraft Co.; vice-president of the Chamber, Alfred Menches, president, Republic Aviation Corp.; H. E. Gilmer, president, Sperry Gyroscope Co., Inc.; chairman of the Eastern board, Victor Emmanuel, president, The Avian Corp.; J. Carlton Ward, Jr., president, Fairchild Engine and Airplane Corp.; standing, Clayton J. Brakner, president, Waco Aircraft Co.; Ernest H. Breach, president, Bendix Aviation Corp.; James Wilson, representing G. W. Vaughan, president, Curtiss-Wright Corp.; Glenn L. Martin, president, the Glenn L. Martin Co.; John C. Lee, acting director, Aeronautical Chamber of Commerce.

this nature have been voted by a later Congress into the Treasury general fund and the agency to which these funds had been voted reverted to the annual appeal for appropriations. Whether an appeal for public contribution with the government merely setting an incentive would yield necessary amounts is questionable.

◆ **Members**—One of the chief proponents of the new committee has been J. Vannevar Bush, director of OSRD, although he is not serving as a member of the Army-Navy-Civilian committee. Scientific members other than Dr. Bush are Karl Compton, president of Massachusetts Institute of Technology and chief of the field division of OSRD; F. B. Jewell, Bell Telephone research executive; and M. A. Tuve, of the Carnegie Institute. Heading the Navy group is Rear Admiral Julius Furer, coordinator of research for the Navy Department. The Army group is headed by Brig. Gen. W. F. Foght, director of the Special Planning Division of the War Department.

Lockheed Plans 4 Constellation Types

Douglas considers 14 versions of DC-4 required by airlines for post-war market.

Lockheed Aircraft Corp. will launch its post-war airplane sales program with the offering in airlines of four versions of the Constellation which, as an air coach, will carry 64 passengers, a crew of six and over 3,000 to 13,000 pounds of mail and cargo, while a deeper version will carry 34 berths or 93 seats.

Two luxury versions will include a Club Cruiser with 48 seats and a lounge-bar, and a so-called Empire Cruiser with 30 reclining seats and a game room.

◆ **14 Versions of DC-4**—Coincident with this disclosure by Lockheed was a report that 14 versions of the Douglas post-war DC-4, the commercial types of the present military C-54 transport, will be required if the manufacturing company is required to meet the varying requirements of airlines that are potential buyers.

That interested companies exchange data on their anticipated needs and agree on a standardized version that will minimize production costs is being urged by Douglas. If successful, the com-

B-29 Secret

The secret of the high altitude and long range performance of Boeing's B-29 Superfortress has been disclosed officially by the War Department—air conditioned cabins with super-chargers maintaining near-normal air pressure within the cabins, even in the thin atmosphere of high altitude.

Construction of the pressurized cabin consists of the B-29 side panels on a structural degree of sound proofing and cabin heating. Secondary advantage of pressurization is crew comfort on long flights. Army can complete a mission with a cushion of foliage, even that is free from the necessity of wearing oxygen masks and from the sub-zero cold of high altitude.

AAF National Command engineers at Wright Field have experimented with pressurized cabins since 1935. Being produced, the world's first pressurized cabin in 1937.

pany and airlines involved may share jointly an improvement of DC-4 specifications this fall.

◆ **Weights Increased**—Meanwhile, Lockheed officials report that progress of test flights has qualified their four Constellation versions for post-war designs and that Lockheed has been able to increase Constellation weights above original estimates and still meet all the civil air regulation requirements.

Performance specifications give the Constellation a fully loaded top speed of 340 mph, a cruising speed of over 300 mph at 65 percent horsepower and a landing speed of 64 mph.

◆ **Collage**—The airplane's service ceiling is quoted at over 25,000 feet and three- and two-engine usable ceilings of 20,000 feet and 17,000 feet. Fuel consumption at 275 mph is the price of gasoline per mile. Six-level takeoff required a run of less than 1,000 feet fully loaded or under 2,000 feet to clear a 50-foot obstacle. Equipped empty weight is 25,000 to 35,000 pounds, depending upon model, and gross weight is 44,250 to takeoff and 73,000 pounds loading.

Some service potentials cited by Lockheed are New York-Los Angeles, 2,449 miles, one stop, 42 passengers and cargo, 8 hours 45 minutes; New York-Las Vegas,

22 sleeper passengers, 8 hours 15 minutes; New York-Los Angeles, 16 sleeper passengers and baggage, 17 hours 35 minutes; Los Angeles-Honolulu, 33 sleeper passengers, 12 hours 8 minutes.

An indication of the post-war competition is seen in a recent news conference statement by Donald Douglas that his company will be able to build a DC-4 that will equal or exceed the speed performance of the Constellation. It also indicates the adaptability of the basic C-54 design for installation of heavy power plants.

East Coast AWPC Maps Vet Aid Plan

A broad new policy giving preferential treatment to discharged veterans has been adopted by member companies of the Aircraft War Production Council East Coast, to supplement programs already in effect. Approximately 15,000 released service men have already been employed.

All the companies—Aviation Corp., Bell, Chance Vought, Curtiss-Wright, Eastern Aircraft Division of General Motors, Fairchild, Martin and Republic—have set up special procedures for processing veterans' applications, with individual handling of veterans who have handicaps.

◆ **Fleet Call on Jobs**—The companies intend going beyond government policy in the employment of veterans, and while the new system is not a guarantee of jobs for veterans, they will have first call on jobs they can handle.

Official AAF Guide

An Official Guide to the Army Air Forces—complete with photos of the B-29 and other top model planes—will be available within a few days to the public through commercial book channels, the War Department announced last week. It is an authentic account of the AAF and its operations.

A special edition of the guide will be issued through official channels to AAF units at home and abroad, and will be used in orientation, indoctrination and training programs. Two versions will be available: one, a cloth-bound edition produced by Simon & Schuster and the other a paper-bound, pocket-size issue produced by Pocket Books. Ltd. Royalties will go to the AAF Aid Society.

Invasion Spurs Congress to Act On Plant Reconversion Program

WFB prepares order authorizing any manufacturer to acquire materials and components to make and test single models of projected post-war product.

Congress and the government last week speeded up efforts to meet reconversion problems and, after a full year of exhaustive discussions and little real, appeared ready to take some positive steps. The acceleration of planning brought these developments.

◆ **Senate and House** conferees finally reached an agreement on the Contract Termination Bill that passed the way for final passage of the measure.

◆ **The Senate** started active work on the Clayton Bill, guiding the disposal of surplus, and hoped to have it ready for consideration shortly.

◆ **The Senate** began redrafting the Kilgore Bill which provides for "the harness aspect" of demobilization, and hoped to have that measure heard within a few weeks.

While even the most optimistic members of Congress would concede that, of these three important legislative measures, only one shows the prospect of immediate enactment, yet there is undeniable progress being made on the subjects of surplus and human demobilization.

Congressional leaders, spurred by the emergency, have promised less debate and quicker action when these measures are finally drafted and brought up.

◆ **Reconversion Report**—Meanwhile,

the government moved briskly to help pave the way for the transition period. President Roosevelt transmitted to Congress his recommendations for surplus property and inventory legislation, in compliance with Senate Resolution 190. This report of the President dealt lengthily with the character and extent of surplus, and as the subject of aircraft inventories had this to say:

"Army Air Forces is now preparing to establish at Wright Field, Dayton, Ohio, a centralized, up-to-date inventory system which will reflect at all times the production machinery and equipment owned by the War Department and for which the Army Air Forces is accountable."

◆ **Daily Accounts Kept**—The President also pointed out that a perpetual inventory, kept up to date on the basis of daily change-reports, and checked monthly against a physical inventory, is now maintained for all airplanes within the continental United States. Daily reports of airplanes on hand are received from overseas theaters. Storage warehouses have been established for the assembly and disposal of excess and obsolete parts and equipment as well as scrap.

WFB Chairman Donald M. Nelson also issued a series of statements, most of which were warmly received by the press and by industry, although a careful analysis disclosed virtually nothing to support the enthusiasm. While Mr. Nelson promised that his agency was taking three important steps toward reconversion, the steps were carefully hedged about with qualifying terms with the caveat that his statements carried little more actual promise than those he has been making since the first of the year.

◆ **Reconversion Moves**—These are the steps which WFB is now taking to help industry prepare for the reconversion period: ◆ **An order** is now being prepared authorizing any manufacturer to acquire enough materials and components to make and test a single working model of any product planned for post-war production. Under this order, any manufacturer is entitled to apply to WFB regional or district offices for the necessary materials and components, which will be supplied either out of existing surpluses or through special allocations.

◆ **Mr. Nelson** gave instructions to revoke WFB orders limiting the use of magnesium and aluminum as their manufacturers will be able to obtain these metals and fabricate them into essential end products whenever and wherever manpower is available. With the exceptions of castings, fuel, and forgings, stocks of aluminum and facilities for producing it are now more than sufficient for war needs. Reviving restrictions on the manufacture of end products from



SUPERFORTRESS STABILIZERS

Completed stabilizers for Boeing's B-29 Superfortress are shown in a section of Fisher-Baldy Cleveland aircraft plant No. 2, one of several companies en-

gaged in the B-29 program. Fisher has reached end-stage production of parts and assemblies for the Army's newest air weapon.

Harding Heads SWPA Aviation Division

Levi, Col. William B. Harding, vice-president of the Defense Supplies Corp. at the time Axis ownership and influence was being eliminated in Latin American airbases, has been appointed director of the Surplus War Property Administration's aviation division.

Col. Harding has been attached to the Washington headquarters of the Air Transport Command and has been awarded director of the surplus war property division of the AAF, and is expected to be placed on inactive status.

P. & W. As director of the aviation division of the Surplus War Property Administration, Harding will operate on the policy level rather than handle the mechanics of surplus plane disposal in conjunction with the Post Office Subcommittees and W. L. Clayton, SWPA administrator, he will work out the details of policy and direct the carrying out of these policies by the various government agencies involved. The Post Office Subcommittee is expected to submit a report shortly on its findings after a lengthy series of conferences with industry representatives, and this is expected to form the basis for the policy decisions to be made by Harding.

Before entering government service, Col. Harding was a partner in Smith, Barkey & Co., New York investment banking house, and participated in the many aviation financing transactions of that firm. Among these were Eastern Air Lines, TWA, Pan American Airways, and Glenn L. Martin Co.

He was also a member of the Interdepartmental Corps Plans Committee of WPB, and director of the Office of Transportation and Aviation, Office of the Coordinator of Inter-American Affairs.

Heads CED Post-War

Chester E. Haring has assumed active charge of the post-war aircraft research program of the Committee for Economic Development. He was formerly vice-president and director of marketing for Balten, Barton, Durstine and Osborn, and also market research director of Fuller and Smith and Ross advertising agency.

Appointment of J. L. Barrett as assistant director of the project

also was announced. Barrett was, until recently, administrative engineer with the business engineering firm of George H. May of Chicago and New York.

P & W Shuffles 11 In Engineering Sales

A reshuffling of duties, including several promotions, affects eleven members within the engineering activities of the sales department of Pratt & Whitney Division of United Aircraft Corp., and at the same time three members of the staff of United Aircraft Service Corp., of which Sales Manager T. K. Tillinghast is president, also assume new duties.

Louisa H. Gruninger, who was advanced to head Pratt & Whitney Aircraft installation engineering last September, becomes chief installation engineer. The installation engineers assigned to the direction of Field Engineering headquarters will be known as field installation engineers. John M. Tyler has been named installation consulting engineer and A. L. MacGill, liaison engineer.

Other Changes.—Raymond L. Collier becomes chief, performance and installation requirements, with N. J. DeRex as installation requirements engineer. O. C. Christensen as engine performance engineer and D. C. Conrad as engine performance engineer. C. J. Swenson, appointed chief, installation test operations, with V. E. Thornburg as installation analysis engineer and John B. Collins, formerly Dayton representative, as operating instructions engineer.

Changes in the organization of United States Corp., announced by Tillinghast, let R. B. Partridge, Jr., transferred from western division, and J. L. Barrett, advanced to the position of Dayton representative, the appointment of John Craig, Jr., as assistant chief, western field engineering, and F. W. Dufon, as assistant chief, airframe engineering.

Hammer Field C.O.

Col. Ralph A. Bevely, commanding the 23rd Wing Headquarters, has been appointed commanding officer of Hammer Field, Fort Ord, Calif., replacing Col. Gay Kirkwood, who has been transferred to Fourth Air Force Headquarters in San Francisco.

WEST COAST REPORT

CAA Official Wins Prize for Port Plan

Letter urging Los Angeles port to meet post-war aviation expansion requirements puns over idea and sees war bond.

By SCHICKLER RANGS

The Los Angeles Examiner has awarded to R. P. Schmidt of Santa Monica, superintendent of airport services for the sixth region, CAA, a \$100 war bond, first prize, for Schmidt's letter in a contest to bring from readers of the newspaper suggestions for creating a "better Los Angeles" after the war.

Schmidt cited briefly Los Angeles' lack of adequate commercial and private airports, and the forecast of the Los Angeles County Regional Planning Commission that by 1950 the Los Angeles area will have within its environs one airplane per 300 population or close to 3,600 aircraft.

Coke Program.—He proposed a coke program—expansion of terminal airports, the building of new airports, and the construction of adequate landing areas for private flyers.

He urged that the city build airports, freeways leading to major airports. He said he believed that the city's rail, motor, water and air transportation should be united in a carefully integrated program that will have as its goal and aim the elimination of utility contribution, maintenance of property values, and industrial progress.

Public Service.—Schmidt saw the letter contest as an opportunity to get city planners to consider the post-war aviation needs of Los Angeles. He looked for a sharp increase in air travel, air cargo, and private airplane flying.

Schmidt said California farmers are concerned with after the war they'll be having much of the land, perishables by air and added that dairymen are talking about post-war milk hauling by air.

Fields for Fire Fighters.—Northern California communities support U. S. Forest Service camp sites who would like to have not less than 200 airports, one for every forested township, built for quick movement of fire fighters, tractors and other fire fighting gear—airports but enough for DC-3 operations.

Schmidt reports that his month

region headquarters at Santa Monica is getting an average of three airport applications a day from California and Nevada communities having populations ranging from 300 to 5,000.

New CAA Port Plan Ready for Congress

Expected to be submitted around July 10 at Los Resolution, calling for survey of post-war airfield needs, is passed.

Revision of the Master Airport Plan of the Civil Aeronautics Administration will go to Congress around July 10 if Rep. Clarence Lewis's House Resolution 568, calling for a CAA survey of post-war airport needs, is passed. In the unlikely event of non-passage of the resolution, CAA would issue its airport findings as its own report, with copies going to Congress.

There have been previous suggestions from the Civil Aeronautics Administration that CAA Hill and from other sources that a study be made of post-war airfield requirements. For that reason, and because the administration and other CAA officials had already anticipated the additional work such a report, work was begun on it more than six months ago.

CAA Date Delayed.—Dispute the report probably will be made to Congress, CAA is not at liberty to discuss any of the questions involved at prior to submission to The Hill. Much of the information has been organized, but the document has not been written.

It is a reasonable assumption that CAA will not submit a study of planned appropriations over a period of years, for a formula under which the Federal government will allocate funds, to be matched by the states, in proportion to (1) the area of the state, (2) its population, (3) its number of registered aircraft, and (4) number of existing accredited airports—or some variation of the plan under which the highway system was built, for several reasons.

One reason is that the CAA is in small fields for non-subsidized aviation, for facilities to take care of expected expansion in the feeder line system, probably for water buses to accommodate such new U. S. Navy ferry services as may use seaplanes.

Mr. Lewis' resolution, calling for the CAA survey of airports, decreases the likelihood that Rep. Jennings Randolph's recently introduced airport bill will be taken



INVASION GLIDER:

First photo of new Mustang glider which was used in the landings on Normandy. With a wingspan greater than that of a Lancaster four-engine bomber, the British Mustang was towed by a heavy bomber, according to the British report, but can land in a small field. During the recent invasion the Mustang carried a light tank. It appeared that a number of these large gliders were used in the operation.

up for consideration, but its contents probably will enter into the writing of the bill that sets up the post-war program.

Mustang, Kingcobra Get New Aeroprops

Installation of the four-blade AeroProducts propellers on the North American P-51 Mustang will begin soon, and the new Bell P-59 Kingcobra will use the General Motors product, it was revealed last week.

It was learned also that AeroProducts is going into production on a six-blade contra-rotating prop for planes that have not yet been publicly announced.

Expansion.—Installation of the AeroProducts propeller heretofore has been principally on the Bell P-59 Kingcobra, but W. J. Hinchey, general manager of the AeroProducts Division, disclosed that new Aeroprop designs have been assigned to other new fighter planes for the AAF, in addition to use on the Bell and North American fighters.

The Aeroprop, never in production before America's entrance in the war, was hollow-ribbed steel blade construction, with a new simplified hydraulic operating system, entirely contained in the hub.

Ballard on Coast

Ballard Aircraft Co., Inc., of New York, manufacturers Army training engine and aircraft components, has established Western headquarters in San Francisco for sales and service work. Company is affiliated with the Walter M. Ballard Co., of New York, interior designers and engineers.

P-W Produces 51% of 1944 Horsepower

Pratt & Whitney Division of United Aircraft Corp. reports that in terms of total horsepower in all planes produced in the United States last year, their engines accounted for 51 percent.

William P. Gwinn, general manager, said Pratt & Whitney engines were installed in 68 percent of four-engine heavy bombers, 85 percent of our twin-engine medium bombers, 96 percent of our four-engine transporters, 48 percent of one- and two-engine transporters and 49 percent of our single-engine fighters.

Licenses Manufactures.—Cooperating in this overall production were Pratt & Whitney's licensees manufacturers: Ford, Chevrolet, Buick, Nash-Kelvinator, Jacobs and Continental, Hawker, Gwinn and Pratt & Whitney's plant at East Hartford produced more horsepower than any one of the licensees.

Thurlow Killed

Col. Thomas L. Thurlow, 34, top AAF navigation expert killed last week in a transport he was piloting, shortly after taking from Love Field, Dallas, was Chief, Instrument Navigation Branch, Materiel Command Equipment Laboratory, Wright Field. He was author of the AAF Manual on Celestial Navigation.

Col. Thurlow was navigator on the Howard Hughes round-the-world flight in 1931, for which he won the Collier Trophy. Thurlow was credited with many navigation instrument developments now used by the AAF.

Trippe Gives PAA's World Route Stand

Urges "community company" operation in support to stockholders for 1945.

Pan American's stand for "community company" operation of U S international air routes after the war as opposed to the free competition advocated by most of the domestic airlines is announced publicly and officially for the first time in President Juan Trippe's report to stockholders for 1944.

■ National Policy—Trippe says the problem of national policy in international air transport is one concerning national defense, overseas trade, and "jobs and livelihood of millions of Americans."

"Your company's position," he told stockholders, "has been that in international air transport, as in international commerce, our nation's best interest would be served by concentrating the effort of the United States behind a single American international operation, strong enough to compete on even terms with the great foreign flag air transport monopolies created by the other principal trading nations."

■ Community Company—"This operation would take the form of a community company in which all American transportation enterprises able to contribute would be permitted to participate under an organization plan approved by the government. Your company has considered that the policy of the government on extension of this importance must be determined, not by the interests of any company or group of companies, but by what

Study Training

Members of a committee appointed by William A. M. Murphy, Assistant Secretary of Commerce, to study all phases of future Federal aviation training are John R. P. Morgan of the Aeronautical Chamber of Commerce, John Wilson of National Aviation Trades Association, Lowell H. Stevenson, manager of the National Aeronautics Association, Dieter Martin, president of the National Association of State Aviation Officials, Dr. Thomas O. Hiram, Council of Colleges, and Dr. William A. Lloyd of Loyd Grant College Association. The committee and its assignment are informed, and some discussion have been held upon completion of their study they will report to Mr. Murphy. CAA has participated in the past in public training for both civilians and the military through CPT and WTS.

will be best for our country as a whole."

The annual report showed Pan American had grossed business last year of \$126,900,000, largest in the company's history and \$14,588,000 over 1942. Biggest part was contract operations and construction for the armed forces.

■ Net Off \$544,000—Net income, however, was \$2,095,485, compared with \$1,964,436 and \$2,356,237 in pre-war 1939 and 1940, and \$3,364,231 and \$3,765,018 in 1941-42.

Last year's operations carried service to 44 countries, possessions and colonies, every continent and over all major ocean routes. Among contract services expended for Army and Navy were those to the South Pacific, the Alaska area, across the North Atlantic, and to Africa, the Middle East and India. Yet in addition to these wartime services, Pan American operated \$2,668 of the \$4,243 pre-Pearl Harbor commercial route miles.

■ Contract Expanded—Since Trippe's report was written, the Navy has announced termination of its contract with Pan American for the Alaska operation, effective July 31, 1945. Navy's transport requirements in and out of the Alaskan area thereafter will be cared for by Naval Air Transport Service, but PAA's Alaska Division will continue regular commercial operation from Seattle to Alaska.

The termination will mean a reduction of about 900 employees in

PAA's Alaska section of its Pacific Alaska Division. But the expectation is that most of these will be absorbed by other divisions. Navy said the remainder could be taken care of in aircraft and other war industries in the west coast area.

Wasp Bill Defeated

A margin of 2 votes defeated the bill maintaining the Women's Airforce Service Pilots in the House last week. A roll call was necessary to determine the fate of Rep. Connolly's WASP bill.

The bill not only provided for taking the women pilots into the armed forces on the same status as the WAC, but also provided for enlistment of the group, and a regular training program equivalent to the Aviation Cadet program in the AAF. Jacqueline Cochran heads the WASP.

■ Opposition—The House Civil Service Committee, brought into the picture because the WASP are civil service employees, held that there is a sufficient supply of qualified male pilots and no necessity for training inexperienced women as pilots.

Gen. H. H. Arnold and other top Army Air Force officials testified in favor of the WASP and asked for expansion of the program.

Machin-gun Cutback

A 34 percent cutback in production of 50-caliber machineguns of the type used on combat planes has been ordered by the Army. It becomes effective July 1, and results from recent changes in plane production.

Major portion of the reduction will be borne by the Colt Patent Firearms Co., Hartford, Conn., with a cutback of 40 percent from present production, affecting between 2,900 and 4,000 workers with skills that can be utilized in other plants of the area, notably ball-bearing plants.

Solomon Resigns

Members of the Airlines Committee for U S Air Policy have been informed by Sam Solomon, chairman of the board of North-east Airlines, that he is resigning July 15, after a year as head of the committee. Solomon, confirming this late last week, said he had called a meeting of the committee members July 11 to consider further policy.

The Helicopter Is Growing Up

The fierce, gaily and small, rough field means working to rescue helicopters, demonstrated by the Materiel Command. A soldier waves it in to pick up a "wounded" comrade.



Powered with a 420 hp. Wasp, the XR-6 is big, relatively fast and maneuverable. Its useful load is double that of current production models.



A closed side ladder is used to transport wounded. The cover has a window, seats for air-conditions, and the patient can talk to pilot and doctor by microphone.



The XR-6, streamlined, heavier-powered brother of the XR-4, which is now in service, will be in production by Nash-Kellogg before the year end.



RF-1 control arrangement is shown in this contemporary photo. Sikorski employee is installing the main pitch control lever, on which the throttle also is mounted.

Change Envelopes

The Post Office Department has eliminated the red, white and blue border on air mail-stamped envelopes and expects thereby to step up by 30 percent the \$6,000,000-a-month output of its stamped envelope factory.

The Department announces it is unable to meet the demand by armed forces overseas for 6- and 8-cent air mail-stamped envelopes, although the entire production is going abroad. None of the borderless stamped envelopes will be available to domestic trade until the armed forces demand is satisfied.

dolph said he offered his bill as the basis for the development of a program, and that he expected and would welcome proposals and changes from all interested parties. Mr. Rosten said, at this writing, that he had only read the bill hurriedly, but that if it turns out to be as substantial agreement with the ideas of the Washington administration, and of the Budget Bureau, there is no reason why it might not become the instrument of the post-war airport program. That is entirely up to Congress.

Road Dept. May Aid Flight Strip Work

Authorization for the Commission of Public Roads to cooperate with state highway departments and any Federal agency in land development, construction and maintenance of flight strip, is contained in the post-war federal-aid highway act of 1944, which has been approved by the House committee on roads.

Persons authorized by the act when requested by the State highway departments are made available for this work. While the act authorizes a total of \$100,000,000 to be available at the rate of \$480,000,000 a year for the three succeeding post-war fiscal years, no specific amount is mentioned for flight strip work.

Funds. The bill provides that, in addition to funds requested by state highway officials, there may be funds under other appropriations for carrying out provisions of the act and for partial aid or any part of the necessary costs incurred therefor, including the cost of acquiring the land necessary.

Extend CPT Act

Bills extending the life of the Civil Pilot Training Act, which expires June 30, have been passed by both houses of Congress.

Senator McCarran's bill, S-1432, extended tenure of the program for five years, but the House approved a change cutting it down to one year. This difference on duration of the extension was being considered by a Senate-House conference committee at press time. It was thought likely a compromise would result.

The committee seems no apprehensions and is inclined merely to keep alive the civil air training nucleus until a permanent post-war program can be worked out.

Alert Operators Find New Business

Severn Airways' Atlanta base steps up profits and reduces losses after WTS construction.

Flight training for civilian students, charter flights, and reconditioning of aircraft and engines are providing a lucrative field for some enterprising WTS operators who were shunted back into private aviation.

Fixed base operators and schools are confronted with restrictions from war to peacetime programs as their military contracts expire and are not renewed.

Example.—One example of conversion in the Southern Airways, Inc., translates Atlanta Municipal Airport. Private commercial operation is proving a financial boon to this unit of the company.

Officials believe there is sufficient business to support efficient operation of aviation gasoline is not so drastically rationed. Since Apr. 15 the Atlanta unit has been exclusively a private operation. It has shown a steadily growing profit.

Repair Work.—New business is coming from repair and reconditioning of planes purchased by individuals from Defense Plant Corp., repairing planes for Civil Air Patrol members, engine and aircraft overhaul, charter flights, and from training some 60 private students. Most students are taking primary instruction. About two-thirds are women. There is also good instruction business in retraining former WTS and AAF personnel without instructions for equipment ratings or airline pilots.

The company also reconditioned three Lockheed Electras for Alaska Airlines, which the line bought from the Army at Maxwell Field, and expects several more in the shop soon.

Equipped for Major Overhaul.—Charter trips now stem from emergency trips and from passengers stranded at Atlanta airport by primary.

Southern is equipped at Atlanta for major overhaul of light and medium craft, and can handle from five to seven jobs at once. Overhaul costs of the strictly private operation are much smaller than the military which accompanied WTS training, and W. F. Underwood, company vice-president and Atlanta general manager.

Southern went into WTS when

the experimental CPT program started in May, 1939, and continued until Jan. 15, 1944. It gave about 1,000 courses at Atlanta in primary, secondary, instrument, cross-country and glider familiarization.

Nearing completion is the company's new hangar, 340 by 180 feet, on the Municipal Airport, to be dedicated July 8, described by officials as the largest privately owned hangar in the South, with space for 150 medium aircraft. Two hangars back contained, 30 by 160 feet, will house shops and offices.

ACCA Clarifies Port Terminology

The Personal Aircraft Council of the Aeronautical Chamber of Commerce has developed terminology to clarify the specific landing facility needs of various communities.

Airport.—has been used generally to cover all types of air bases but has come to mean a terminal facility primarily used by scheduled air transport. They are indispensable for smaller craft, due to the speed of airplanes and future cargo liners and the density of traffic.

Airpark.—to describe landing facilities suitable for personal aircraft, or community enterprises built specifically as a landing facility for non-scheduled and personal aircraft. They are built in form of T's, I's or X's, according to terrain, with runways 2,000 feet long by 300 feet wide, with paved surfaces preferred, but not essential and costs ranging from \$10,000 up. Essential that airparks be built within the confines of the community, adjacent to the market place.

Lightings.—to accommodate flying on cross-country trips, with runways of 1,000 by 300 feet, in most cases taking the shape of an L, but in localities where the prevailing winds are constant, a single runway would be sufficient. Seen as projects for state and country highway departments. Average cost from \$6,000 to \$10,000.

Air Hushes.—for communities which have quiet bodies of water adjacent to them, popularity of the term is spreading enough to make their construction economically sound and feasible. Estimated cost from \$1,000 to \$10,000.

THE AIR WAR

COMMENTARY

Strategic Air Operations Assume Global Pattern with B-29 Raids

Huge aerial battle fleet is capable of striking independent and decisive blows far behind battle lines to hasten weakening of enemy resistance.

June has been a bad month for the Axis. The fall of Rome and rest of Kesselring's armies was only a start. The Allied successful landings in Normandy coupled with the Luftwaffe's signal failure to do much of anything about it was another heavy blow. Invasion of Saipan in the Marianas with a powerful amphibious task force, and failure of the Jap Navy and air force to prevent it provided another jolt. Finally, and almost simultaneously, the landing on Saipan, came the lightning stroke from the west by Superfortresses, enacting a giant aerial pincer movement against the industrial heart of Japan from China and the Marianas.

All these are highly significant, and each holds an important place in the grand strategy planned long ago by the Combined Chiefs of Staff in Washington. Most significant of all, however, from the standpoint of military development was the first great battle test of the Army Air Force's new weapons—the very long-range bomber. As General Arnold indicated in his statement, from now on the Forward and Laboratory would be regarded as medium-range heavies and the Mitchell, B-24 and B-26 as short-range attack bombers.

Air Strategy.—The successful debut of the world's first really heavy long-range bomber introduces a new factor into the Asian Pacific side of the war, and permits a test of strategic air power which may prove even more decisive than its admirably high achievements in the European conflict. Air strategy singles out the long-range bomber as a primary weapon in its own right, capable of striking independent and decisive blows far behind the battle lines

to hasten the weakening of enemy resistance and to greatly reduce the ultimate cost of the total assault. General Marshall's statement concerning the new organization which is to control the expanding fleet of super-bombers points in the same direction. They are conceived of as an air battle fleet not under the control of any theater commander but directly at the disposal of the Joint Chiefs of Staff through the Twentieth Air Force, which has thus become an instrument of worldwide capabilities. A mere glance at the map (on better at a globe) will show the immense possibilities of a weapon which can accurately smite several tons of high explosive bombs and incendiaries from bases up to



SUPERFORTRESS COMMANDERS:

Brig. Gen. Kenneth H. Wolfe, Jr. (right), veteran of the European air war, is chief-of-staff of the new global 20th Air Force. Commanding General of the 20th Bomber Command that attacked Japan is Brig. Gen. Kenneth H. Wolfe (left), whose group served as nucleus for the 20th Air Force. Gen. H. H. Arnold, commanding general of the AAF, is also commanding general of the 20th Air Force.

1,500 miles away, from several directions.

China and the Air War.—Not too much should be expected at once, however. The task of setting up adequate bases for such long-range operations staggers the imagination. In the meantime, Japan is feverishly working to cut China in two, and making uncomfortably good progress at that. If our excellent air bases out of the Peiping-Hankow-Canton line are cut off, giving the Jap interior lines of land communication and supply, the results could be tragic. General Chennault who knows his China and who knows the enemy, estimated that it could easily add two years or more to the war in Asia.

Japan is on the defensive everywhere but in China. Boasting victories in the South Pacific, in New Guinea, the Marshall Islands, and even the Marianas may drive Nippon off the Pacific as a maritime power and seriously curtail her style as an empire-builder. But if the coalmines herself on land, knocks China out of the war before air power can really be effective there, the rest to this country is won and millions will be calculable. The Burma campaign will have gone by the board and the grand strategy of the Navy and Seventh Air Force across the Central Pacific will be of little avail. More air power for China now will be the most effective means of



INVADER BACK FROM THE WARS

A North American A-38 Invader fighter-bomber which successfully returned to its home base in Italy after flying through an explosion of an ammunition truck and crashed into a tree.

wiring this desperate race through air power to really smash up and demoralize the enemy communications and supply and cause the greatest threat to bag down will do the trick.

►"Liberator" Crews—Up to the advent of the B-24, the Liberator has been the greatest long-range striking weapon in the China-Burma-India theater and in the Pacific, used by the 10th-14th AAF in Asia, the 8th in Australia-New Guinea, the 18th and Navy in the South Pacific, and the 7th and Navy in the Central Pacific.

Minimum to targets 1,000 to 1,200 miles away, with relatively light but reasonably effective loads, have been far from unusual. Many of these have been over hundreds of miles of water, directed against small but strategic targets, and pinpoint navigation was a rare gas seen for pinpoint bombing. With this in mind, a comparison of the B-24 crew operating in the AAF, and a PB4Y crew in the Fleet Patrol Wing should be of interest.

►AAF's 16-Man Crew—The B-24's entry crew of ten at follows: (1) pilot, (2) co-pilot, (3) navigator, (4) bombardier, these are officers. Relelled men include (5) aerial engineer—gunner, (6) radio operator—gunner, (7) assistant radio operator—gunner, (8) tail gunner, (9) bombardier—gunner (tail turret), (10) tail gunner and (11) nose gunner—the two last often specially trained crew gunners. The crew members usually having their gunnery as a highly impor-

tant but second string to their bow. This is a typical crew, details may vary. Navigator and bombardier frequently are trained in both jobs and the pilot and bombardier the co-pilot have at least a working knowledge of aerial navigation.

►Navy's 11-Man Crew —The PB4Y's are especially modified B-24's with longer noses for a different arrangement of crew, provisions for the greater range for paired duties and often special anti-submarine equipment. Crew of the Navy Lib includes three officers and eight enlisted men at follows: (1) first pilot (control

plane commander), (2) co-pilot (navigator), (3) navigator (co-pilot), the first pilot is also a navigator, which allows a triple chance of getting out there and back.

Relelled men, with various technical ratings, include (4) air bomber (trained in ordinance), (5) 1st radio man and (6) 2d radio man (trained in communications), (7) plane captain (flight engineer) and (8) mechanic (trained in aviation mechanics), (9) tail turret gunner, (10) ball turret gunner and (11) waist gunner. All eleven of the crew also are trained in gunnery, and all but the first pilot (commander) may actually handle guns on any given mission. Some day the full story of the Liberator's part in the global air war—over land and over sea—will make stirring reading.

MAPS/NAV

P-47 Wing Shipped Lashed on to C-47

By strapping the wing of a Republic P-47 Thunderbolt fighter to the underside of a Douglas C-47 transport, members of a service squadron at a New Guinea base of the Fifth Air Force Service command have accomplished an engineering feat believed to be the first of its kind in any war theater.

►Replaces Damaged Wing—The modification has been used on various occasions to transport new wings to P-47's which were damaged while landing in remote areas where repair facilities were limited or lacking.



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NEW P-47 THUNDERBOLT:

The new series of Thunderbolt fighters and fighter-bombers is characterized by increased emergency power through augmented water injection, improved climb and maneuverability through jettisonable fuel tanks, and the bubble-canopy for full visibility.

Curtiss Commando

LOW RIDER FOR TOMORROW'S AIR COMMERCE





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SAVING

Clifford's discovery of the method of bracing aluminum tubes, having very thin walls, has revolutionized aircraft design two vital ways:

1. Now heavy-weight copper oil coolers and coolant radiators (with a weight of X) can be replaced by feather-weight aluminum without any design change. The resulting weight-saving is $\frac{2}{3}X$. This victory over weight is now helping two famous types of USAAF fighters perform gloriously on many aerial battle fronts.

2. In addition, the greater strength of aluminum under continuous heat and pressure now enables aircraft designers to replace the traditional cylindrical radiators by models having a streamlined, elliptical cross-section. Two of these elliptical models assembled in "V" shape occupy far less space than two conventional round ones... offer far less air resistance... boost potential aircraft speeds by worth-while margins.

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PERSONNEL

May Geo. R. R. Myers deputy assistant chief of air staff, Materiel Maintenance and Distribution, is the acting commanding general of the Army Air Forces Materiel Command with headquarters at Wright Field. He temporarily succeeds Maj Gen Charles Brundage, who was in-



Brundage

Myers

forced because of poor health. General Brundage became outstanding general of Wright Field over a year ago after having been in charge of the West Coast area for the Materiel Command. General Myers will resume his regular assignment as deputy to Maj Gen O. P. Reed, assistant chief of air staff, in charge of Materiel Maintenance and Distribution when General Brundage returns to Wright Field.

Frank R. Ross is the new director of the engineering division of Aircraft War Production Council. West Coast, succeeding Dale Armstrong.



MILLIONTH HOUR:

When Southeast Airways flew its first hour of military pilot training, three were men: Ralph Jordan, Thunderbolt field; Cliff Dunn, Sky Harbor; and Al Sturz, Falcon field, were there. They are shown synchronizing their watches at the millionth hour in flight. All three are now directors of training for Southeast.

now with Northrop Aircraft. Inc., under that company's new public relations group under direction of Steve Harnough Associates, Inc. Raymond F. Law, who has been a member of the Council's information staff, is assistant to him.

Col. Lawrence L. Free, formerly vice-president, operations, for Transcontinental and Western Air, Inc., has been nominated for promotion to brigadier general. Col. Free, commanding the Fourth Airborne Wing of the Army Air Transport Command, will be the fifth former associate executive to become a general officer and the fourth from TWA. He has been awarded the Air Medal for volunteering to make hazardous test flights of new Army planes over the North Atlantic. In promotion, Col. Free was formerly in the pilot at the first airplane making a cargo of material in commercial service.

Members of the War (spatial) branch of the Inter-American Roadless has joined the staff of the Foreign Child Refugee and Airplane Corp. He will be active in the foreign child refugee activities of the corporation as assistant to A. B. Stock, director of foreign relations and will make his headquarters in Washington. The Roadless was originally conceived to promote private flying between American continents by increasing and improving intermediate airports and ground facilities for servicing and making available accurate maps and route information. Presently it has been active in making available the pilot training techniques developed by the Civil Aviation Authority.

Alberta Sandoz Llorente has been named assistant business of Aero-Naval, S. A., a Mexican airline controlled by T. E. B. Llorente will be added membership in the group of consulting and finance in Mexico City. For the last five years he has been treasurer of a large Mexican airline and has been connected with airlines for 15 years.

West J. B. Collins and Ernest C. A. Moore, pilots of the Naval Air Transport Service, have been elected by the Secretary of the Navy for making an emergency flight across the Atlantic with American shells.



WAR PERSONNEL HEAD:

Several American military personnel managers of the Douglas Aircraft Co. plant at Tulsa, served as personnel adjuster in World War I and returned to personnel problems during World War II. It is believed he has about 25 years as a personnel manager for manufacturing companies.

In French waters, which had been out of operation during action in Italy. The training, which included the men to serve Commandant Robinson, are the first awarded to pilots of the Naval Air Transport Service.

H. C. Bates (above) has been appointed factory manager of Aircraft Corp., which, Mich., is a new organization created to most greatly expanded production. In addition, R. J. Wilson, formerly in supervisory capacities with General Motors and Ford, has been named machine shop superintendent. Also, Malone, formerly general manager of aircraft parts operation of Buell-Landberg Manufacturing Co., has become assembly department superintendent. G. H. Hines, previously with J. E. Cox Co., at Rockford, is appointed manager of production control. And Donald C. Egan, formerly shop assistant superintendent, becomes production and tool engineer.

George H. Conner, until recently manager of the Brewster Aeronautical Corp. inspection salvage department, has been appointed staff engineer in the Aeronautical Division.

of the Society of Automotive Engineers. He will work under the direction of Assistant Division Manager J. D. Redding at SAE headquarters. He has been a member of the automotive engineering faculty of the Engineering, Science and Management War Training Program and member of Eastern Aircraft War Production Council's Safety Committee for Management Utilization.

Robert M. Polakow has been named acting head of Texas A. and M. College aeronautical engineering department, succeeding Dr. Howard W. Harlow, who was appointed dean of the school of engineering by Glen Edwards, college president. Edwards will fill his recent appointment as president, was the engineering dean.

Valero J. Neer (right) has been named manager of the public relations division of the Wright Aircraft Corp., succeeding Samuel S. Harwood, who was recently appointed manager of the Washington office of Curtiss-Wright Corp. Neer joined Wright in 1940 as editor of both Trade Week, a monthly column



PCA STATION CHIEFS:

Ken Seely (left), newly appointed station manager in Birmingham, and Joe Babes (center), who manages the PCA station in Akron, are pictured with Harry Park (right) during a week's orientation tour at the Akron office.

George Irwin, formerly of Consolidated Valves, San Diego Division, has been named chief industrial engineer of the Valves Field division. Irwin succeeds Nelson L. Murrell, who will remain at the Allentown division.

Col. Paul S. Blair, base commander at Kelly Field, Tex., and Maj. Raymond P. Jones, Lead-Leave officer of the San Antonio Air Service Command, have been awarded Penn's highest aviation honor, the Flying Cross, for their contributions to anti-American cooperation.

Kenneth M. Neen has been appointed district traffic manager for United Air Lines at Toledo and Herbert E. Rapprecht has been named district



Seely

Babes

chief at Flightline, American Corp.'s Pasadena plant, replacing Harry McCallister. Phleger was formerly personnel director of the Consolidations Equipment Corp., of Pasadena.

Cornell H. Oberlin has been appointed assistant to the operations manager at Flushing, division of Kaiser Cargo, Inc. He has been associated with a Philadelphia firm of consulting engineers.

Jack Presson, formerly with the Newark, N. J. and the Philadelphia branches of AP, has joined the public relations staff of Lockheed Aircraft Corp. as assistant editor of the Lockheed Star, weekly employee publication.

John Hartman, former Philadelphia Jacques photographer and later with Brewster Aeronautical Corp., has joined the staff of Business magazine.

Col. Vance E. Remondino, charged with operations and maintenance of transport and combat planes of the Fifth Service Area Command, and a former vice-president of Douglas Aircraft Co., Inc., has just been nominated for the rank of lieutenant general. Colonel Remondino is now stationed in the South Pacific and has been in the Australian and New Guinea war theaters for nearly two years.



Steve

magazine, and Wright of the Milwaukee weekly newspaper for employees. In addition to his present work directing the public relations program of the seven Wright plants in New Jersey and Ohio, he is also a member of the Labor-Management executive of the company.

Howard M. Kauler has been appointed chief of Flight and Field operations at the Allentown Division of Consolidated Valves Aircraft Corp. He came to Allentown from the Leaswell Division where he held a similar position. Allentown Division also succeeded appointment of E. F. Mason in general inspection, stock assembly, and the J. M. Langlois as superintendent of Detrital Fabrication.

Ted S. Phleger is director of person-

nel management for the company at Philadelphia. Irwin, who has headed the company's Philadelphia office for ten years, returns to Toledo replacing New York-based Rapprecht, joined United a year ago from the Union Pacific railroad.

Paul W. Baker, service representative of the Curtiss-Wright Corp. Airplane Division, estimates that he has avoided more than 250,000 miles by air, including several ocean trips, while servicing P-40 Warhawks in Africa, India and China. Baker says American P-40 pilots have shifted up a notch of eleven to one against the Japs.



DISCUSS CAA PLANS:

George F. Remondino, administrative officer for the sixth region, Civil Aeronautics Administration, Santa Monica, and A. E. Stockberger, executive officer of CAA, Washington, make plans for the 1943 fiscal year at conference at Santa Monica.

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This new Piston-Type Wobblie Plate Pump serves an estimated thirty (30) pounds of weight in a Hydraulic system, by completely eliminating Unloading Valve Circuit. It also eliminates the damaging shock that is produced by the Unloading Valve. Top performance is ensured in actuating Landing Gear, Turrets, Flap Controls, Surface Controls, and Bomb Bay Doors, by use of this Variable Volume Pump. This pump designed for continued rugged use on all hydraulic systems up to and including 3,000 P.S.I.

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ALL LEUBRO PUMPS are constructed for maximum dependability and endurance under all conditions of service. Overhaul matched bearings, coupled with Verobloy pistons ground full length in a hardened alloy steel block insures long life and dependable performance.

This Pump also available in Constant Displacement Model.

Complete information and engineering service available. Write for details.

AIRCRAFT PRODUCTION

B-29 Tests and Output Record As Sensational as Plane Itself

Boeing Wichita, with single small factory turning out PT-17's, was on heavy production schedule of Superfortresses within two years after construction of huge new plant.

By SCOTT HERSHEY

The concurrent experimentation and production turned on by Boeing stand out among the many involved factors concerned in the manufacturing program of the B-29 Superfortress, a program which is perhaps the greatest ever put behind a single implement of war. It is noteworthy that two years after the construction of the special B-29 plant of Boeing Airplane Co., at Wichita, Kan., was started, the plant was on schedule, producing substantial numbers of this great bomber which is now disclosed as having been in aerial combat.

Full Capacity Not Used—The Wichita plant has a capacity for even greater production than is even being achieved and, in addition, fewer men being per pound of airplane are being used on the Superfortress at Wichita than were required for the B-17 Flying Fortress at the same stage of development.

Preparations for quantity production at Boeing's Wichita plant were first authorized seven months before Pearl Harbor. This was while construction of the first three experimental models was just getting under way at Boeing headquarters in Seattle.

Had Single Small Plant—At that time, the Boeing Wichita division had but one plant, a comparatively small one in which PT-17 Kaydet primary trainers were being made. On May 18, 1941, J. E. Schaefer, Boeing vice-president and general manager of the Wichita division, received a War Department directive authorizing the purchase of rigs, dies, fixtures and all critical materials essential to the production of the B-29 at Wichita with delivery of the first airplane scheduled for Feb. 2, 1943.

Schaefer faced a tremendous task. He didn't even have a plant

in which to build the B-29. He didn't have the manpower to staff the plant. He also previously acquired for a factory for the production of Flying Fortress wings, a plant was built which was to be devoted entirely to B-29 output. Under the original B-29 production program, it was planned to have Boeing's Seattle plant build the bodies and outer wing sections of the bomber and ship them to Wichita for assembly. Wichita, besides assembly, was to build the main wing and tail surfaces.

Self-Sufficient Unit—The possibility that Seattle might experience an air attack and an increase in the demands for Flying Fortress caused this program to be abandoned and Wichita was made into a completely self-sufficient unit where all sections of the airplane, except those destined to subcontractors, about 10 percent, would be manufactured and assembled.

By February, 1942, scarcely a month after Pearl Harbor, the B-29 attained national prominence when the War Department contracted

with Bell Aircraft, Fisher Body Division of General Motors, and North American to become partners in the program, one which involved construction of a huge new plant to be operated by Bell in Marietta, Ga., and another to be operated by Fisher at Cleveland. **New Plant Added**—Later, Boeing's new plant at Renton, Wash., originally intended for the production of the Boeing Sea Ranger for the Navy, was added to the B-29 program in place of North American which is no longer a participant.

The B-29 manufacturing program dwarfs anything previously attempted in aviation. It embraces hundreds of subcontractors, vendors and suppliers, as well as the five huge plants where the planes actually are built. These include the Boeing factories in Seattle and Renton and Wichita, the Glenn L. Martin plant at Omaha, Bell in Marietta and Fisher Body at Cleveland which is playing a major role in the fabrication of subassemblies.

Boeing Shifts to B-29's—As the program develops, all of Boeing's plants will be devoted to the B-29 and the manufacture of Boeing's B-17 will be carried on entirely by Douglas Aircraft and Lockheed Aircraft, which have been producing Flying Fortresses under a joint production agreement with Boeing. The Boeing company will continue to carry the engineering responsibility for the B-17 as well as the Superfortress.

A B-29 executive is operating as a production control unit. It coordinates the procurement of materials and subcontracting, prepares and maintains master production schedules, insures requirements and distribution all design change instructions among people



Key Men in B-29 Production. Top executives of Boeing's great bomber plant at Wichita, center of the production program for Superfortresses, are shown above, left to right: J. E. Schaefer, vice-president of Boeing Airplane Co., and general manager of the Wichita Division; M. D. Deussen, assistant to the vice-president and general manager; and H. F. Brown, works manager of the Wichita Division.

contractors. It is headed after the Boeing-Douglas-Vega (now merged with Lockheed) committee formed in 1941 to study the cooperative production of the B-29. Originally suggested by P. G. Johnson, Boeing president, it is composed of a representative of each aircraft firm participating in the program and a representative of the Army Air Forces.

Into the B-29 have gone the combined efforts of the AAF Materiel Command technicians and the combined experience of the AAF general staff and operating commands. It embodies, as well, the most advanced ideas gained by Boeing in 30 years of heavy bombardment airplane development and the experience resulting from the two and one-half years the Flying Fortress has been in combat.



PLYWOOD SEAT TEST:

A plywood pilot's seat undergoing the structural strength test in the Aircraft Laboratory of the AAF Materiel Command, Wright Field. Seats are required to withstand a load of 2,000 pounds and have taken 4,800 pounds.

ultimate to 232 flight hours on the three XB-29's.

Wind Tunnel Work—The pre-flight testing included 6,900 hours of wind tunnel work, continuous testing of scaled down parts on the B-29 and exhaustive tests.

Structural tests began during the time the first XB-29 was taking form. All major components of the plane, built in full scale and complete form, were tested to destruction to determine beyond any doubt the accuracy of engineering strength calculations.

The testing to destruction included, testing of component parts while the parts are held in a special testing jig, testing of component parts in relation to the others after they have been installed on the airplane and the testing of the entire airplane.

Drop Tests—Another major test was the drop test. The Army stipulated that the plane must withstand a free drop of 27 inches. The bomber, with weight made to simulate full equipment, bomb, fuel, crew and ammunition load, was raised 27 inches from the floor and dropped. In another test, sections of the B-29 were riddled with 20 mm. cannon shells and machine gun bullets to determine the ability of the plane to withstand gunfire.

Labor Big Problem In B-29 Production

Major crises convulsed and shook set up to train skilled workers.

Manpower was not the least of Boeing's problems when the Army ordered the B-29 Superfortress into production.

Increasing teams went through cities, towns and hamlets and individual workers and whole families in some instances were signed up. In cooperation with the United States Employment Service, Boeing convinced major cities in the area west of the Mississippi. In the spring of 1942, American colleges and universities were lured to recruit producing engineers.

2,400 Engineers—By the summer of 1942, Boeing's engineering division had reached 2,400 engineers with training or experience in 28 fields of engineering sciences.

Most of the engineering personnel was stationed at Seattle but there was a force of 600 in the engineering division at Wichita. The combined engineering personnel of the two plants now is approximately 3,000 persons, exclusive of tooling engineers.

School Set Up—With engineers of all types being lured for airplane work, Boeing set up an engineering school about two years ago. More than 90 percent of the new hired for the program take a four to six weeks' course before starting work.

In Wichita, one of the steps taken by J. E. Schaefer, vice-president and general manager, was to ask for and receive permission to cut back the Raydier trainer program. It was cut from 375 to 100 a month, which released 2,000 workers for the B-29 plant. An additional 2,000 were released from work for the program.

Work Week Revised—The work week was changed from three 10-hour shifts to two 12-hour shifts with good results. The Wichita division, at the moment has just about enough workers to meet schedules, but the number is marginal and for the program ahead, more will be needed. About 60 percent of the employees at Wichita are women.

The worker turnover at Wichita was 57 percent in April as against a 65 percent national average. Absenteeism runs around 5.1 percent, which is below the national figure.

Service Record..

The first Beechcraft built for the U. S. Army Air Forces was delivered and accepted on June 13, 1939.

Since that day, thousands of Beechcrafts have been accepted by both the Army and the Navy. Since that day, Beechcrafts have flown millions of hours for our armed services. Beechcraft advanced twin-engine bombers have schooled a majority of Air Forces bombardiers, multi-engine and multi-engine pilots. Beechcraft twin-engine and single engine transports have safely and swiftly carried important personnel on war missions, in this country and in foreign theaters of war. Beechcrafts have successfully operated from all sorts of runways in every conceivable type of climate, in all kinds of weather.

In more than a thousand days and nights of strenuous service, the stamina and performance of Beechcrafts have been severely tested. After five years of war and preparation for war, they have made such an outstanding record that today the Army and the Navy are continuing to order more Beechcrafts for training and other vital purposes.



Official Photograph U. S. Army Air Forces

Beech Aircraft



CORPORATION

BEECHCRAFTS ARE DOING THEIR PART WICHITA, KANSAS U. S. A.



AAP'S NEW FUEL TRAILER:

A trail trip of a new 250-gallon fuel trailer unit which has been developed for advanced fighter bases, and can be towed in tow of a jeep behind the versatile Army jeep. Wright Field soldiers are pictured taking a train of trailers over rough terrain in a test near Materiel Command headquarters.

30 Million Radio Order to Bendix

Orders totaling about \$36,000,000 have been received by the radio division of Bendix Aviation Corp. for an improved type of very high frequency radio for use in warplanes.

W. P. Millard, general manager of the division, said the sets will be a definite improvement over the type now in use and that the company will shortly be in full production on the order.

Stable—He explained that among the advantages of very high frequency radio in communications work is the comparative freedom from atmospheric or natural static. Like television, it is of comparatively better range, following the line of sight and stopping at the horizon. Because of the shorter range, a number of planes scattered from can use the same frequency without interference.

New Globe Orders

Globe Aircraft Corp has received substantial new contracts, including new sections for the Curtiss C-46 Commando transport, while continuing work on the twin-engine AT-16 advanced trainers.

John Kennedy, president and general manager, said other new assignments include a new contract on the AT-17 trainer, a wing

modification and contracts for spare parts. He said tooling, engineering and other phases for the C-46 project are shaping up.

Ford Makes Allison Distributor Heads

Plastic distributor heads for the Allison liquid-cooled aircraft engine are now being produced by Ford Motor Co. A similar type of head, developed by Ford research engineers, has been used for some time in the Pratt & Whitney engines being built by Ford.

The heads are made of a thermosetting plastic compound and Ford engineers say the principal advantage is the comparative freedom from atmospheric or natural static. Like television, it is of comparatively better range, following the line of sight and stopping at the horizon. Because of the shorter range, a number of planes scattered from can use the same frequency without interference.

10,000th Bell Plane

Bell Aircraft Corp has produced more than 10,000 fighter planes since war production began in 1941, including an undelivered number of the jet-propulsion Arrow and P-59 Kingcobra, new high altitude fighters, although most were P-43 Airacobras for theAAF and the Russian air force.

Packaged Control Units Speed Repairs

Standardization of mechanism minimum lay-out of warplane, Lee officials tell SAE.

Standardization of aircraft control mechanisms, which are so built that they are completely interchangeable on the bench-top, mounting lay-out for repair of combat planes, has played an important war role and has changed many U. S. aircraft from hydraulic control to electric.

Richard M. Meek, vice-president of Lear, Inc., told the Society of Automotive Engineers at Dayton that at the start of the war there were few electro-mechanical controls on American aircraft and that today nearly all production models are so equipped.

Changeover—Is the interim and just after the principle of electrically operated control systems proved itself, mass produced airplanes were changed over to electric control after they had come off the assembly line.

Meek said the standardization of component parts of the aircraft actuators which are used to operate such plane parts as wing flaps, trim tabs, air intake shutters, ventilation temperature control devices, bank bay and cargo doors and retractable landing gear permits a great many variations in the basic control device to meet design and performance requirements of different plane types.

Advantages—A further effect of this standardization, he said, is the ability to package the actuators as complete assemblies containing all switching control, control mechanism and relays so that their final installation should connect airplanes requires only the connecting of the driven mechanisms and the standard connectors.

Canada Cuts Costs

Production costs in Canadian aircraft plants have been cut more than half a million dollars through worker suggestions, the Aircraft Production Control Committee reported in Toronto last week.

Workers were paid \$64,696 in awards for ideas that have saved \$334,328. Maximum individual award was \$500, while a mail award of \$25 was given to the worker who will be elected in September by Ralph P. Bell, director general of aircraft production for Canada.

FINANCIAL

U.S. Urged to Curb Over-Expansion Of Air Transport After War

National City Bank of Cleveland, in study of industry, sees danger in uncontrolled development; doubts complete approval of separate companies can be made at present in view of current conditions and pending legislation.

"A Study of the Air Transport Industry," a brochure issued by the National City Bank of Cleveland, appears to be of more than passing interest. Far more important than the analysis itself is the background and emphases surrounding the sponsorship of this report.

In a foreword, the bank says that aviation review was prepared to keep "absent of changing conditions and to point out some opportunities and problems" of the industry.

Business Studied—Obviously, the bank's prime purpose as to this respect is to explore the possibilities of doing business with the airlines. While Cleveland is an air-minded city (the locale of the famous air races)—none of the airlines is headquartered there, Cleveland, however, is a key city on the routes of United, American and TWA. Other carriers would like to tap this center and have so applied. In any event, the exhaustive attention given by this center bank to the group is a tribute to the financial status attained by the airlines.

Expansion Foreseen—The study advances two main conclusions. "First, that the air transport industry in the post-war era will expand at an unprecedented rate. This rate could be made faster by the introduction and passage of restrictive legislation, but should be almost unlimited upon the passage of the present constructive of the post-war pending before Congress, and

"Second, that a complete approval of the separate companies in the air transport industry is not possible under current conditions and pending legislation."

Sidelight—This reference to legislation, in addition to forecasting

attention to the dependency of the industry on Congress, also provides an interesting sidelight. Another major financial institution in Cleveland, the Cleveland Trust Co., which has received national publicity through its widely-distributed Bulletin. This monthly review is prepared under the direction of Col. Leonard P. Ayres, the bank's vice-president.

Colonel Ayres is also economic adviser to the group of railroads controlled by the Allegheny Corp.—Chenapeake and Ohio, Pere Marquette and Nickel Plate. These roads, through their representatives, have been very active in the Association of American Railroads' air transport surveys and as such are believed to have opposed the Lee Bill or any measure which would effectively curtail the air carrier from the aviation field.

The National City Bank in its report notes: "Sound legislation is the key to success on which all aviation will be built" and points to the constructive features in the Lee Bill and observed that the "absence of Federal legislation of this type... technical advancement and public acceptance would be delayed seriously." In other words, the Cleveland bank, while taking a disinterested view, appears to support the Lee measure.

Comprehensive—The study itself is comprehensive but suffers from the failure to show the source of its primary data as well as from the evident dated factual material presented. This has led to some naive naiveties.

For instance, in presenting existing military aircraft types which may have commercial application, opening comment is presented for the Douglas C-47. Now C-47 is nothing more than a DC-3 instead of using the estimated per-

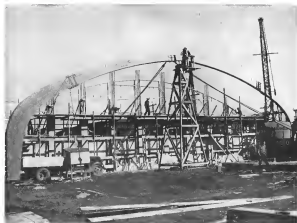
plane-mile costs of 46 cents for the C-47, would a net have been far more realistic to show the actual operating costs of the DC-3 equipment readily available from current airlines? Such costs range from about 29 cents per plane-mile for the DC-3 and 33 cents for Eastern and American. These costs are representative for DC-3 operations and, of course, exclude ground and indirect expenses.

Outlook—In viewing the future of air transportation, the review lists legislation, technical development and public acceptance as the all-important factors in discussing the legislative aspects, the struggle for international operations and the construction of the convention, it is noted that the Civil Aeronautics Board, through its forthcoming decision on the proposed acquisition of American Export Airlines by American Airlines, may formulate in its own, a definite air policy of the transportation commercial airline operators.

The immediate post-war growth of international air transport, the study believes, will be largely at the expense of surface transportation, particularly of the steamship lines, although over a period the airlines can be expected to generate a substantial proportion of their own traffic.

World Trade—The failure for any country to exercise an international airway seems the least promising field of all, according to the review. The present volume of world trade estimated at about 11 billion dollars annually, is almost 50 percent of the total volume of world war production, estimated at about 4 to 6 billions a year, will create a highly competitive situation in which steamships, although the slowest form of transportation, are still the lowest cost operation. The familiar truism is repeated by the review in that cargo traffic will gravitate then to the airways only where the special benefits of speed are proven by speed will offset the extra cost of such service.

Technical Progress Factor—Considerable emphasis is devoted to the part in technical development will play in the future of the industry. Both military and commercial are expected to lead the industry in heralding the industry's future progress. The assertion is made that "many contemplated mergers between airline manufacturers as well as airlines will have to be made." It is difficult to see the validity of this statement insofar



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The versatility of wood as a construction material and its unique ability to have not followed this product through the war years.

It has been our privilege at Timber Structures to assist in the modernization of wood. Among other things, this has involved design, for without design the value of research, engineering, prefabrication, assembly and erection are not reduced to the full.

From our plans have come such diverse and practical designs as glued laminated arches (illustrated above, designed by the Seattle office of the Austin Company, for trusses, beams, columns, bar structures as small as municipal bungalows, as large as navy ship docks.

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Design and engineering staffs are integral parts of Timber Structures offices in New York, Portland, Seattle, and San Francisco.

Glued Laminated Arches, 25' 0" span, prefabricated by Timber Structures, Inc. for Boeing Aircraft Co. Arches and half box of K-47 flying fortress and K-39 super fortress.

like to talk to you about the economy, availability, strength and permanence of timber as a building material.

A personal record of the work we have done and are doing is available for the asking. Please write for 48-page book "Engineering in Wood." We are prepared to serve you in timber and allied structural materials.

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as it may apply to the engine builders. For example, the Pratt & Whitney engine is the heart of United Aircraft Corp. The Wright product is the keystone of Curtiss-Wright Corp. Aviatik Corp. has its Lycoming. Then, there are and long have been three well-integrated aircraft producers, Allison, owned by General Motors, is hardly likely to be declared an airplane. The situation is true, however, that competitive conditions may lead to the development of aircraft at lower initial costs.

The bank study is also correct in its observation that the development of new designs takes time and hence it will be a number of years after the war before existing planes will be made obsolete by new advances.

Public Acceptance—Considerable faith is expressed in the public acceptance of air-transportation in that the national point of view has been stimulated as a result of the war from "air-madness to air-consciousness."

Summarizing its review, the bank concludes that:

- ▶ International air transportation . . . should have world-wide economic and social effects . . . it should expand as rapidly as commercial and industrial developments of Latin America, Asia, Africa and Europe, and other areas should permit.
- ▶ That domestic air transportation, through wider acceptance, reduced prices, faster routes, and a new air mail policy, should increase continental commerce immeasurably.
- ▶ That private flying should undoubtedly experience a post-war boom. It should be favored by legislation, technical development and an educational program.

Luscombe Control Returned to Owners

Control of Luscombe Airplane Corp., seized in April, 1942, by Albee Property Custodian Lee Crowley, has been returned to Leopold H. P. Klotz and the North American Investing Co. by the present alien property custodian, James E. Markham.

The company has a plant at Trenton, N. J., and ground schools at Trenton and Dallas, Tex. The Trenton plant has been producing Navy training planes and parts of other Navy planes. Prior to the war it produced a popular small, all-metal plane.

▶ Held Controlling Interest—Klotz

and the North American Investing Co. held controlling interest in the company with 74,000 shares of stock and various notes having a face value of \$400,000. The interests were taken over by Crowley's office on the basis of a finding that Klotz was a citizen of Germany and that the funds used by him to acquire the property were traceable to German interests. After filing of a claim by Klotz, it was brought out in a public hearing that Klotz, at one time a citizen of Germany, had been a citizen of Liechtenstein since 1926. Klotz' nationality must be changed to United States citizenship before the war and that funds used by Klotz had been given him by his parents, residents of New York.

Douglas 1943 Sales Top \$987,000,000

Donald W. Douglas, president of Douglas Aircraft Corp., Inc., received \$100,500 from the company for the 12 months ended Nov. 30, 1943, according to the company's report to the Securities and Exchange Commission.

Carl A. Cover, senior vice-president and general manager, who resigned June 30, 1943, got \$15,416. A. E. Raymond, vice-president and engineer, received \$50,800.

Fourteen directors, officers, legal counsel, employees and sundry others not identified, received \$344,858, including \$9,616 to a director as commissions on insurance policies sold. The accounting firm of Ernst & Ernst got \$64,368 for services during the fiscal year.

▶ Earnings—The company's income statement showed net sales of \$937,837,293, including fees accrued and costs incurred under sub-contract, after deducting \$4,588,888 for possible liability to obtain payment of all claims. Costs and expenses amounted to \$629,812,173, including the following: train administration and general expenses, \$667,242; federal capital stock tax, state franchise, etc., \$2,525,894; and experimental costs, \$1,367,122.

Giving effect to certain minor adjustments, income before provision for taxes and contingencies, amounted to \$315,025,120.

▶ Taxes—Distorted state and federal taxes, including normal and surtax and excess profits taxes, amounted to \$24,460,000.

The company set aside \$6,848,668 as provision for contingencies,

leaving a balance of \$5,955,257 available for transfer to surplus.

Reorganization proceedings for the fiscal year 1943 have been completed, the report showed. The surplus has been charged with \$12,000,000, the agreed upon refund and has been credited with \$8,500,000, the approximate refunding for reduction. On the basis of the report submitted in the 1943 settlement, no refund for 1943 is indicated, the company reported.

Colonial Reports On 1943 Operations

Colonial Airlines, Inc., reports operating revenues for 1943 at \$411,054. Operating expenses, including provision for obsolescence and depreciation, totaled \$468,359, leaving net profit of \$3,565. Profits received under government training contracts amounted to \$13,464.

Colonial paid Edmund Juma, president and director, \$30,500 during the year, according to the company's statement to the Securities and Exchange Commission.

▶ Dick Gets \$14,000—Alexander C. Dick received \$15,000 for his services as secretary, director and general counsel, Edward S. Kelly, vice-president and director got \$10,850 and seven other officers and directors a total of \$50,321, while one employee, not otherwise identified, received \$20,500. Three officers, who are not directors, received \$15,488.

Net income before federal income taxes amounted to \$16,885 and the tax provision totaled \$4,900. Net income for the year amounted to \$11,985.

Trainers to Mexico

An undrafted number of training planes has been sold to Mexico by the Canadian government, it was disclosed in Ottawa during debate on a bill setting up the Crown Assets Corp., which is to sell Canada's surplus wartime supplies.

C. D. Howe, minister and supply minister, said overall value of \$88,150 were included in a sale of \$350,889 in surplus materials to the Mexican government.

▶ Given Back to Mexico—The trainer craft, which cost \$5,000 to \$7,800 each originally, and which were no longer useful in the current training plan, had been sold to Mexico for \$1,400 to \$1,900 each.

Soviet Reported in Agreement In Principle on U. S. Air Policy

Russia apparently willing to specify certain routes over her territory which she will permit friendly nations to use, official sources reveal.

Outlines of post-war international aviation arrangements are emerging rather clearly from discussions being conducted by this country and for the first time it can be stated that Russia is favorably disposed toward the principles put forward by our State Department.

Despite the official disclaimer of them as "purely exploratory," there is every indication that these conferences are producing the pattern for post-war commercial flying on the international airways.

Pitfalls—There are pitfalls between the agreements in principle now being reached and the adoption of a new multilateral air convention to take precedence over the Paris and Havana accords. This

was inferentially noted last week by Secretary of State Cordell Hull. He was at great pains to explain to newsmen that these conferences are purely exploratory. They are continuing, he said, as preliminary steps toward more formal conferences later on.

But elsewhere in the Department there were more optimistic expressions. One source said "real progress" is being made.

These developments must have led to that conclusion.

Queries usually characterized by cautious utterance reported that Russia appears willing to specify certain routes over her territory which she will permit commercial planes of friendly nations to use.

New Zealand will doubtless bar aviation operations as far as possible with those of the United Kingdom, but she definitely will not do this to the injury of her friendship with the United States.

Britain has "yielded" to the American viewpoint in post-war flying.

China is in full agreement with the principles advocated by this government.

American Plan—the evidence, therefore, all points to multilateral adoption of a post-war aviation pattern which is essentially an American plan.

It is worthwhile, accordingly, to outline what the United States does want:

An international air convention, in L. Welch Page's words, to establish "the right to get there"—the right of commercial transit.

Bilateral or multilateral commercial arrangements establishing sound trade principles to govern the conduct of commercial flying.

An international "CAR" which will be a recommending agency, but not an enforcement agency.

Right of commercial transit established on a worldwide basis, it is recognized, will be mainly a psychological achievement. The incentive to do business with other nations will be stimulated. And here is where United States aims

As soon after war of two flying Liberators made a dash for Ploest, American planes gave history a fresh chapter. Official Photo U.S. Air Force. Ploest mission—Army Reserve Refinery.



... AT THE FUTURE "PLOESTIS"

Every red-blooded American hopes for many more headlines that shout "Mass Raid by American Liberators." Every solid punch those heavyweight facts drop on enemy targets... every future "Ploest" ... is possible only through the courage and skill of the American kids that fly them, and the unceasing work of free American craftsmen who build them.

With millions of other war workers, the men and women of GECCO look forward to each new record-smashing performance of the latest Liberators and other American warplanes equipped with GECCO carburetors and fuel pumps.



CARBURETORS
FUEL PUMPS
PROTEK-PLUGS



BOAC'S WORLD ROUTES:

This new map, depicting routes now being flown by British Overseas Airways Corp., provides an interesting comparison with the map of world routes suggested by the Civil Aeronautics Board 16 days ago as

desirable for U. S. air carriers (AIRLINE NEWS, June 16). The map above, which shows that BOAC leads at many of the places mentioned by CAB, appeared recently in Aeroplane, English aviation magazine.

CHANDLER-EVANS CORPORATION

SOUTH MERIDEN
CONNECTICUT, U.S.A.



Planning for Tomorrow

THE photograph above shows an earlier Kellett development, a military-type autogiro, undergoing tests by the Army Air Corps.

For many years, aeronautical engineers have striven to develop aircraft able to take off or land vertically on any kind of field or on roofs, and to climb handily over most fighter obstructions. Aircraft that can cruise smoothly at satisfactory speeds, or hover motionless.

During the war, all available materials and man power are required for military needs. But the growing Kellett engineering staff looks forward to

peace, and the opportunity to focus its aeronautical design abilities on helicopter developments for a wide range of contributions to American progress.

Indications are that modern aircraft of the helicopter type will soon save time and money in forestry service, ranching, dusting and spraying agricultural crops, patrolling and inspecting cross-country power lines and oil pipe lines, in prospecting—and many more everyday services. Kellett Aircraft Corporation, Upper Darby (Philadelphia), Pennsylvania

KELLETT

OLDEST ROTARY WING AIRCRAFT MANUFACTURING COMPANY

come into play. If we are to be the world's breadbasket for years to come, countries desiring to obtain products here will have to "play ball" on bilateral commercial air arrangements, as one qualified source expressed it.

Reciprocal Obligations—It is recognized, too, that reciprocal obligations cannot be avoided in the post-war air world, but officials here are aware that for many years after the war these probably won't be more than a handful of countries in the global flying business. They note that countries which failed to build up their internal services will not be ready to launch meaningful external ones. In brief, they feel that we will be able to hold our own, if the larger political and economic arrangements now advocated by President Roosevelt and Hull are acceptable to the rest of the world.

Airlines Run Behind In Reconversion

Arrangements reported being made with Douglas to help remove planes ordered by Army.

By MERLIN MECKEL

Planes are being returned to the airlines so fast that they cannot keep up with reconversion to commercial use. Airline sources say arrangements are being made for Douglas Aircraft at Santa Monica, Calif., to devote more time and materials to helping on the job.

Six airline companies have been doing their own reconversion to this point: American, Eastern, Northwest, PCA, TWA, and United. Chicago & Southern has done part of its own work, but now has two planes being reconverted on the West Coast. Braniff and Delta have one each. PCA and American are planning to send out some of their latest returns, and others may do likewise. Other lines, not having their own facilities, have been relying on Douglas, which from now on is expected to devote more than 100,000 man-hours a month to reconversion for the airlines.

11 More Being Released—War Department notified the Civil Aeronautics Board last week that 14 additional planes were being released immediately to the domestic lines. All DC-3 types, they bring the total allocated to commercial airline service to 242. This was the third return of this size in a month.

Three of the planes most recent-

World Hearings

The CAB moved ahead on foreign route schedule late last week with announcement of dates for pre-hearing conferences and hearings on world route applications as follows:

North Atlantic—Pre-hearing August 1, hearing October 16.
South Atlantic—Pre-hearing August 2, hearing November 1.
North Pacific (via Alaska)—Pre-hearing September 3, hearing December 13.
Central Pacific (via Hawaii)—Pre-hearing September 18, hearing January 16.

Australia (via Hawaii)—Pre-hearing October 2, hearing February 3.

Hearings for new services between the Pacific Coast and Hawaii is set for September 4.

Hearings for new routes in South America, Central America, the Caribbean, and Mexico will open September 15.

by turned back went to American, two each to Braniff, Eastern, PCA and TWA, and one each to Colonial, Delta and Northwest. Thus, in a little over a month, excluding returns of May 13 and May 24 and June 10, American has received 8, Braniff 3, Colonial 3, Chicago & Southern 2, Delta 1, Eastern 6, Northwest 1, Northwest 2, PCA 8, TWA 6, United 3, Western 2. Continental, Island, Mid-Continent and National, which use Lockheed, received none in either of the three lots.

Diplomatic Phase—On the same day the latest return was announced by CAB, dispatches were

How It Stands

Return of 14 more planes to the airlines by the Army last week means that 242 are now or soon will be available for domestic service, divided as follows:

Airline	May 13	June 10	Total
American	10	10	20
Braniff	3	3	6
Chicago & Southern	2	2	4
Continental	0	0	0
Delta	1	1	2
Eastern	6	6	12
Island	0	0	0
Mid-Continent	0	0	0
National	0	0	0
Northwest	1	1	2
PCA	2	2	4
TWA	6	6	12
United	3	3	6
Western	2	2	4
Total	34	34	68

made that a Douglas C-54 had been outfitted as it came off the assembly line for use on diplomatic, military and other governmental missions here in months ago, were that the plane, which has a built-in elevator, was being readied for President Roosevelt, but the White House says no plane has been made for such use.

There have been reports that release of a C-54 to the Civil Aeronautics Administration for conversion and CAA tests last denied by the agency is likely in the near future. Air Transport Canada sources say, however, that while there has been some talk of such a return, no action has been taken.

Eastern Seeks Link To So. America

An international aspect was introduced in the Great Lakes-Piedmont proceeding last week as Capt. V. V. Reichenbacher, president of Eastern Air Lines, said his company's application was designed to provide direct service between the industrial Midwest and Latin America, through a Miami-Buenos Aires route for which Eastern has applied.

Eastern, he said, can establish a Detroit-Miami trunk line with the grant of only 248 new route miles, much less than the new mileage required by other applicants.

Assault Board's Policy—He characterized as a "communist philosophy" the Board's attitude of economic expansion for small carriers, claiming that all such expansion was unjustified as the consequence of large carriers. He suggested that the Board investigate the large profits of specialists in the stocks of small airlines.

Displacement of service which would result if the application of some of the parties in the case were granted also drew Reichenbacher's fire. Of American Airlines' proposal which would in effect parallel Eastern from Chicago to Miami and down Boston to Miami, he said: "I find it difficult to believe American meant these applications seriously."

Cites Displacement Moves—He pointed out that every applicant in this case proposes to displace the Jacksonville-Miami routes of Eastern and National. "No other carrier has felt the Board's benevolence more than National," Reichenbacher said, referring to the New York extension recently authorized for that carrier.



American Commission of CAPA Begins Work Under chairmanship of Oswald Ryan, Civil Aeronautics Board member, the Permanent American Aeronautical Conventions, recently appointed by the President, held its first meeting in Washington last week. Seated left to right are Col. Louis A. Johnson, Chairman Ryan and Rep. Alfred Balabanek. Standing are Wil-

liam A. M. Burden, Arnold W. Knauth, Stephen Latchford, Theodore P. Wright, Skelley Morgan, and Dr. Francis W. Reichelderfer. Senator Bennett Clark was unable to attend. The U. S. group is part of the Commission Aeronautics Permanente Americana (CAPA) which was set up at the Lima Conference in 1937.

U.S. Group Sparks Hemisphere Air Unit

Commission undertakes active role as CAPA program to unify aviation among American peoples.

A new U. S. commission set out at its initial meeting in Washington last week to make a "going concern" of CAPA, the Permanent American Aeronautical Commission, of which it is a member. The larger group, of which this country's new representation was appointed recently by the President, is designed to unify aviation in the Western Hemisphere. Thirteen republics are members.

Oswald Ryan, member of the Civil Aeronautics Board and chairman of the U. S. Commission, said it was the intention of his group to do "everything possible" to make CAPA effective, and his associates said he was interested personally in pushing the action.

Agenda.—At its first meeting, the U. S. group organized and discussed preparation of proposals for transmission to member bodies of other member governments with a view to drawing an agenda for a full CAPA meeting. CAPA was established by the Inter-American Conference at Lima, Peru, in 1937. This is the second U. S. commission, but only one member of it—Theodore P. Wright, director of the

Aircraft Resources Control Office of the Aircraft Production Board, War Production Board, War Department—served on the first. Members serve two-year terms.

The first U. S. commission had a number of meetings and worked out several ideas on problems in which CAPA is interested, such as international, public and private air law, coordination of technical facilities, and organization and scheduling of inter-American air routes, and the coordination of national and international air services.

Members.—In addition to Chairman Ryan, the U. S. commission members include: Sen. Bennett Champ Clark (D., Mo.), Rep. Al-

fred L. Balabanek (D., N. C.), William A. M. Burden, Assistant Secretary of Commerce for Air; Col. Louis A. Johnson, former assistant Secretary of War; Wright, Skelley W. Morgan, chief, Aviation Division of the State Department, Stephen Latchford, State Department, expert on air law; Dr. Francis W. Reichelderfer, chief of the U. S. Weather Bureau, and Arnold W. Knauth, Justice Department, expert on air and admiralty law. Their next meeting will be held in call by Ryan.

Cary New Pogue Aid

Chairman L. Welch Pogue of the Civil Aeronautics Board has selected Charles Cary, superintendent of operations and general manager of Alaska Airlines for the past year and a half, to replace E. Francis Rully as his administrative assistant.

Cary studied at Northeast University, Boston, and the Massachusetts Institute of Technology. He spent five years in the traffic and operations department of American Airlines' New York-Boston operation, and is a Link Invisco instructor.

Rully will take his oath as District of Columbia Public Utilities Commissioner sometime in July. He expects to leave Pogue's office late this month. In the meantime, he is assisting Cary with his new duties.

Four Applications Filed by Western

More indicates plans for expansion and integration of newly acquired Inland Air Lines.

Four applications for new routes filed last week by Western Air Lines with the Civil Aeronautics Board indicate that carrier's plans for expansion and for integrating the newly acquired Inland operation with its present routes.

One of the routes sought would link Denver with Minneapolis via Fort Morgan and Sterling, Colo., North Platte and Norfolk, Neb., Sioux City, Iowa, and Mankato, Minn. Charles Dick with this application, indicating that it would be an extension of the Los Angeles-Denver route Western hopes for.

Baron-Chicago.—Extension of the Inland system from Huron, S. D., easternmost point on Inland's present route, to Chicago also is asked. Intermediate points on this route are Mitchell, S. D., Sioux City, Fort Dodge, Waterloo and Dubuque, Iowa, and Rockford, Ill.

A third application proposes a connection between Inland's routes AM 38 and AM 39 between Sheridan, Wyo., and Rapid City, S. D.

Western also asked that the Denver-Chicago route, now temporarily certificated to Inland, be made permanent.

Other applications include:

Denver to Lakeland, Fla., proposed. The line would extend to Miami, Fla., to be known as the Lakeland-Miami-Panama route. Western Airways Company Inc. first applied for this route in 1936, but it was rejected in an order of the Civil Aeronautics Board. It was then proposed that the route be known as the Lakeland-Miami-Panama route.

Chicago to Atlanta, Ga., proposed. The line would be known as the Chicago-Atlanta-Miami-Panama route. Western Airways Company Inc. first applied for this route in 1936, but it was rejected in an order of the Civil Aeronautics Board. It was then proposed that the route be known as the Chicago-Atlanta-Miami-Panama route.

India Now and Post-war

To manufacturers of aircraft, air engines, aeromedical equipment, instruments including aviation, radio, aerodrome lighting and kindred from The Asian Air Associates—A company well-known and steadily expanding—has been formed to establish the exclusive agency for air vehicles to manufacture—their manufacture in British India. The Asian Air Associates are planning a chain of maintenance stations at the major air ports in India which places them in an unique position to represent Air Lines and undertake the maintenance of aircraft.

Bank and other references submitted.

Communique direct to:

THE ASIAN AIR ASSOCIATES

Warrell House, 15 Graham Road - Ballard Estate, Fort, Bombay



AIDE TO CAA CHIEF:

Al S. Koch, who interspersed an eleven-year career with the Civil Aeronautics Administration to go on active duty with the Army Air Forces, has been placed on reserve status to become a consultant to CAA Administrator Charles I. Stanton. Stanton requested his return because of Koch's long experience with the CAA.

2d Colo Line Gets Intrastate Permit

A second Colorado intrastate air carrier, Berris Air Line, operated by Massey & Hanson Flying Service of Fort Collins and Denver, was to start scheduled service last week.

First was Colorado Air Lines, certificated by the State Public Utilities Commission some time ago to operate between Denver and Durango over the San Juan mountains. The PUC set June 25 as the day by which Berris must start its daily schedules between Denver and other cities east of the Rockies in the northern part of the state.

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Memphis, St. Louis, Detroit Case Heard

American, Eastern, TWA and United argued against Mid-Continent and C & S, with Braniff as interveners.

By DANIEL S. WENTZ II

Airline attorneys arguing the Memphis-St. Louis-Detroit case before the Civil Aeronautics Board last week have downed hard on the theses of big versus little carrier, long haul versus local service, single carrier versus connecting service, and North-South versus East-West service.

American Airlines, Eastern Air Lines, Transcontinental & Western Air and United Air Lines were ranged against Mid-Continent and Chicago & Southern, with Braniff Airways an intervenor. Very little agreement appeared, even as questions of convenience and necessity were raised.

Recommendations Unpopular—Recommendations of CAB examiners Thomas L. Wooten and F. Merrill Hubben failed to satisfy completely any applicant, including those whose routes they favored.

American, recommended by the

examiners for a St. Louis-Cleveland route, contended the theory that all carriers, even the largest, must continue to grow. Those most successful have concentrated more on air transportation, American's counsel said. He explained that his company applied for routes in the Middle West after thorough examination of its present system in search of places where "refinements of service" might be added. American, he asserted, has applied for other routes, all as a part of the general plan to improve the system.

Public Objection—This plan was characterized by a lawyer for Braniff as "a glaucomatous plan to commit suicide and battery on every other air carrier in the country." Braniff's interest in the proceeding presumably grows out of the Chicago-New York route it has applied for.

Eastern Turned Down—Eastern's application for a Memphis-Detroit route was turned down by the examiners. But attorneys for Eastern attacked their report sharply, claiming that it was based on a destructive philosophy which, if perpetuated, would result in the "debauchery and destruction" of the air transport pattern. He said sarcastically that it appeared Eastern's application was dashed on the basis of the multiplicity of new connecting services it could provide.

Chicago & Southern, chosen by the examiners for the Memphis-Detroit route denied Eastern, contended that, as a regional carrier, it at best wanted to provide local service needed in the area. New route mileage, if granted, would improve substantially the carrier's economic foundation.

Application of TWA for a St. Louis-Detroit-Cleveland route was not favored by the examiners, except for the addition of Terre Haute on AM 2, but they did recommend that Mid-Continent be

certificated between St. Louis and Kansas City, paralleling TWA.

Attacked by TWA—This drew heavy fire from TWA's counsel who pointed out that little by little, point-to-point competition was being installed on all the major routes in the U. S., usually in small segments, with the idea that the larger carriers could maintain the dominance over the small sections. In the aggregate, he said, such competition might prove ruinous to the trunk line operators.

United's proposed Detroit-Omaha route via Toledo, Fort Wayne, Indianapolis and St. Louis was not recommended by the examiners, was characterized by TWA counsel as a "barrenland" desecrator from United's main system.

ATA Closes at N. Y.

Air Transport Association is expected to close its New York office shortly, and Col. Charles Hart, who managed the office for the ATA's Joint Board of Airline Commissioners, probably will join the Ryan-Walsh advertising firm which handles the association account.

CAB SCHEDULE

June 15, Passenger conference reopens applications for proposed new routes. (Post Office Notice before Examiner F.)

June 16, Transcon deadline for ability to transport from Atlanta Atlanta and New York to Chicago and Cleveland. (Post Office Notice before Examiner F.)

July 1, Deadline for submission of the New York case. (Notice 30 days in N.Y.)

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'Feeders' Must Pay Own Way—Burden

Any government aid must be temporary, assistant Secretary of Commerce tells local airlines group.

"The hardest kind of work" by the operators and aircraft manufacturers, and the "most intelligent program of assistance" by the government will be necessary of future to develop a local airline system which shows promise of becoming self-supporting in a reasonable period. William A. M. Burden, Assistant Secretary of Commerce, before the Feeder Airlines Association at Washington as one of the "hardest advocates" for local airlines, he said they could not be expected to become a great industry overnight, and "they will need financial help from the government as did our trunk airlines 15 years ago. But if properly planned and nurtured, they will grow and grow fast."

The assistant secretary suggested four main lines of attack: reduction of cost of local airline service, increase its convenience to the passenger, establishment of the policy of "transferable government financial assistance" for local services, and early development of lines of this type where there is likelihood of their self-support in a reasonable length of time.

Under Port Development—As a condition for port development, he suggested development of airports, and establishment of a non-premium airmail. Lack of faith by some of the larger air transport companies in local airline business, except as stop-gap service to connect the small city with the big city and long distance trunk line service, Burden said, fails to note the past record on very short distance airmail services of 30 to 150 miles, which shows that from one-half to three-fourths of passengers between suitable towns have been local passengers.

In fact, one of the justifications for establishing experimental local service is to prove the air traffic

feasibility of local service. Burden said, "The government has a duty to see that the local airline industry is not starved for capital and credit."

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Airmail Profit

Airmail may be expected to bring the Post Office Department more than \$10,000,000 profit for the current fiscal year, William A. M. Burden, Assistant Secretary of Commerce, told the Feeder Airlines Association. This compares with a \$3,000,000 deficit in 1942 and a \$17,000,000 profit in 1943.

Participants of small towns. All of which appears to suggest an operating organization that might combine the airport, flight instructor, and pilot and mechanic training operator, and the progressive small town and city investor and banker in the territory.

CAB ACTION

General for Modern Air Lines. (Notice 30 days in N.Y.)

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Feeder Men to Open Washington Office

Plans for a Washington headquarters were laid down at the recent organization meeting of the Feeder Airlines Association, and Don V. Stevens, assistant to Harry R. Stringer, vice-president of All American Aviator, was chosen tentatively to head the office.

At the same meeting, Stringer was elected president of the association, with William R. Seal, president of Southern, Inc., Memphis, as vice-president, Joseph J. McInerney, Jr., Hawthorne Airways, Inc., Grangeville, S. C., was chosen treasurer, and B. H. O'Neil, Ohio Aviation Corp., Newark, N. J., secretary.

Non-Profit Group—The association will be incorporated in the District of Columbia as a non-profit organization. Officials pointed out that they have not organized to create a pressure group.

The association proposes to act as a clearing house for information of mutual interest to its members, encourage establishment of a network of feeder airlines, serve and advise with governmental agencies in development and regulation of air transportation, and promote the advancement of civil aviation and the use of air transportation.

Industrial Membership—In addition to active members, provision was made for associated or industrial membership by companies manufacturing aircraft and equipment. The response of manufacturers to the group has been enthusiastic. They hope it will speed formulation of cooperative plans for feeder operations.

Present plans call for conclusion of surface carriers from membership, which the association hopes to limit to persons engaged in aviation.



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IN SETTING of pre-hearing and hearing dates by its chief examiner, Edward Leasure, the Civil Aeronautics Board follows up its pledge to act on applications by U. S. operators for foreign routes. The dates were set only nine days after the board's extraordinary press conference. The first pre-hearing conference, on North Atlantic routes, will open in less than five weeks, which will push airline staffs to the limit since many present applications will be revised and additional airlines may enter the fray.

Meanwhile, evasion among all of the nation's airline executives to the Board's statement appeared favorable except for Pan American Airways, chief supporter of the single chosen instrument policy.

Informed airline executives were encouraged also by a report that Rinas will engage in post-war international flying through a series of regional companies, operated on an individual basis. One of the main arguments here for a chosen instrument has been that it would be necessary to meet competition with other chosen instrument countries. Further, it was learned that demands

for competition are increasing in Britain, and China is considering the operation of at least two airlines abroad.

Response of the foreign embassies and legations in Washington was mixed. There was some surprise that the Americans had beaten the British to the punch. Previously it had been expected among some diplomatic groups that Britain would take the lead, with the U. S. following along in general agreement. Representatives of Latin-American countries were enthusiastic. European nations were more critical. Greece, which long has wanted an air route through Athens, has approved.

Foreign government representatives who sought a week spot as the route plan suggested by the Board as desirable for U. S. air carriers found their search complicated since in addition to White House sanction, the route outline had the approval of the Treasury Department as to customs, Justice as to immigration, the Army and Navy high commands, the State and Commerce Departments, as well as the Aviation Subcommittee of the Senate Commerce Committee.

Harding Appointment

THE APPOINTMENT of William Barclay Harding as director of the Aviation Division of the Surplus War Property Administration will be approved by the aircraft industry and the airlines. His previous experience is investment banking, aviation financing, and in Americanizing Nazi-controlled airlines in South America, fit him for this vital government policy-making post. He

knows Washington and worked closely and successfully for years with W. L. Clayton, present Surplus War Property Administrator, and with William A. M. Burden, now assistant Secretary of Commerce, both key officials in the important surplus property disposal program the administration of which will mean so much to aviation's future.

Dangerous Pilots

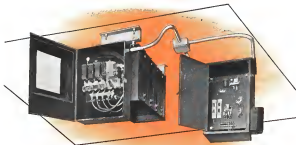
THE ARMY AIR FORCE's positive action taken to curb reckless flying on Federal airways is creditable, although long overdue.

In the first action of the kind, the Third Air Force announced dismissal of six officers for dangerous flying. One was sentenced to six months at hard labor. In Washington the AAF announced that flyers returning from combat areas will undergo special indoctrination courses in civil air traffic regulations.

Eubusant and cocky Army flyers have been re-

sponsible for more consternation along the airlines than the AAF would concede. Several accidents to transports were well publicized. Other mishaps and narrow escapes were not. Airline personnel had reached the inevitable conclusion that merely because a war was in progress careless military flyers were to be allowed to continue endangering the lives of airline passengers and crews. The AAF's campaign, now that it has been started, should proceed vigorously and relentlessly.

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Automatic control corrects voltage swings as well as power-factor for Buffalo war plant

A Buffalo war plant was faced with the problem of providing added system capacity with least possible modification of existing electrical equipment. It also had a problem of extremely poor voltage regulation due to a recent changeover from 25 to 60-cycle power using, in some cases, the same transformers.

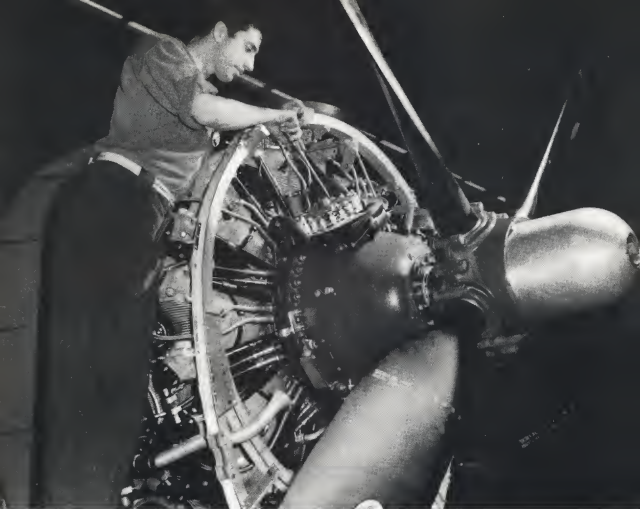
Capacitors solved both problems. A total capacity of 3400 kv-a was installed, effectively correcting both conditions. It was found that during periods of light loads, excessive voltage rises would occur on some of the feeders. Westinghouse application engineers solved this problem by providing voltage-controlled automatic switching of the capacitors. When voltage is low, the capacitors are connected, when voltage rises, their corrective effect is cut off. Voltage, as a result, is now held to a minimum variation, regardless of load conditions.

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